3 Sep 2017

Proof positive

In a White Paper 'An Introduction to the ArchiMate® 3.0 Specification' by: Andrew Josey, Marc Lankhorst, Iver Band, Henk Jonkers, and Dick Quartel (June 2016) journalists writing for Van Haren Publishing the following 2 statements were asserted (ie propositions):

> 1) "The ArchiMate language enables Enterprise Architects to describe, analyze, and visualize the relationships among architecture domains in an unambiguous way" and
> 2) "ArchiMate models enable stakeholders to design, assess and communicate the consequences of decisions and changes within and between these architecture domains"

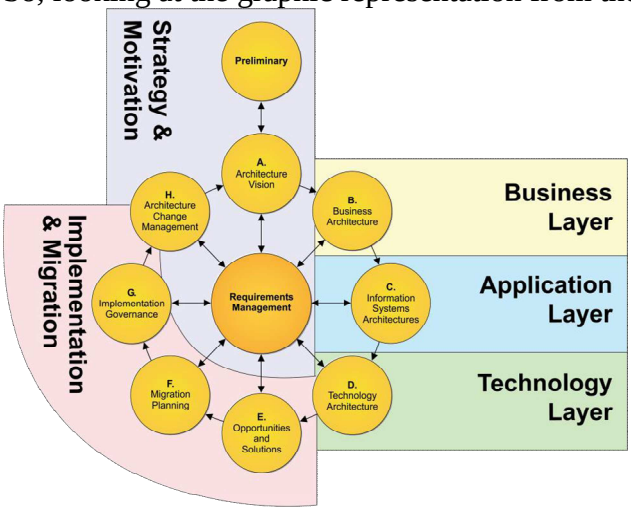
If both of these assertions can be proven to be true, then everything that follows can be trusted. Well maybe they can, however, further proof to the contrary may be discovered, but by then it may be too late to rectify matters without starting over.

If, however, either one of or both cannot be proven, or proven to be invalid, then: How can everything that follows be trusted?

So how does someone prove that 2 sentences written in English can be proven to be valid (true) or invalid (false)?

To answer this question (that is if anyone is really interested in finding out whether the 'written word' can be trusted) I decided to reconfigure the graphical representation showing how ArchiMate 3.0 aligned itself with TOGAF. The reason for doing this was that if you read the 'marketing hype', there is no way to see if there are any hidden traps for the unwary.

So, looking at the graphic representation from the article you will see the following:



But when you read the words you will find the following assertion:

> "Just as an architectural drawing in classical building architecture describes the various aspects of the construction and use of a building, the ArchiMate Specification offers a common language for describing the construction and operation of business processes, organizational structures, information flows, IT systems, and technical and physical infrastructure. ArchiMate models enable stakeholders to design, assess, and communicate the consequences of decisions and changes within and between these architecture domains".

So I asked myself the following questions:
1) Where are the construction and operation 'phases' depicted in the alignment and
2) How do they interact with the ArchiMate models? As these seem to be conveniently left out as well, even if you may find them mentioned later on in the article.

At this stage if I was to apply propositional logic I would have to assign propositional variables to the 3 assertions in order to see if I could either prove or disprove the 'unambiguous' claim.

I would have to rewrite the propositions in such a way that I could plug the variables into a propositional logic formula to decide whether the assertions were valid or invalid.

I am convinced it could be done as I am quite able to use propositional logic to prove the assertion: 'If an apple is a fruit and an orange is a fruit then (an apple or an orange) is a fruit'. It would take 29 steps to prove but the end result would be it is a valid assertion. For those of you interested in propositional logic the steps to prove this would go as follows:
a) Set up the variables. Let:
p be an apple,
q be an orange and
r be a piece of fruit

b) Now using propositional logic symbols as:
^ as the logical 'and' (conjunction) eg an apple and an orange can be written apple ^ orange
-> a condition or implication eg if an apple is a fruit could be written as p -> r
<-> as an equivalence eg an apple is equivalent to an orange written as apple <-> orange

c) So the full proof of 'If an apple is a fruit and an orange is a fruit then (an apple or an orange) is a fruit' can be written and tested as follows
(p -> r) ^ (q -> r) <=> (p V q) -> r

Quite simple if you know how.

If anyone would like to take up the challenge and undertake an exercise to prove or disprove the 3 ArchiMate assertions, please contact me and we can work on it together.

As I did not want to spend days trying to use propositional logic, I decided on the next best thing and that was to try to use semantic modeling to prove my point.

After a few hours working with a spread sheet, I came up with the following representation of the original graphical representation.

ArchiMate specification	Motivation & Rationale			Business processes	Organizational structures	Information flows	IT systems	Technical infrastructure	Physical infrastructure			ArchiMate 3.0 construction & operation phases	
	1	1	1	1	1	1	1	1	1	1	1	Graphical	Language
	1	1	1	1	1	1	1	1	1	1	1	capability	Models
	1	1	1	1	1	1	1	1	1	1	1	resource	
	1	1	1	1	1	1	1	1	1	1	1	outcome	
	0	0	0	0	0	0	0	0	0	0	0	Inputs	
	Strategy & Motivation			Business layer			Application layer	Technology layer	Implementation & Migration			Layers	
TOGAF Architecture domains	H. Architecture Change Management	Preliminary	A. Architecture vision	B. Business Architecture			C. Information Systems Architecture	D. Technology Architecture	E. Opportunities & Solutions	F. Migration Planning	G. Implementation Governance		
	Requirements management												

(See my note for why I have coloured some cells ‘orange’).

Using this representation of the alignment I could now align all the words in the 3 assertions and show that the ‘unambiguous’ claim made in the opening assertion to be ‘False’.

If you do not believe me then try the exercise for yourself.

Having achieved this all you now need to do is to look at following 5 propositions and answer each with definite True or False. A 'Maybe' has to be taken as a False. The 5 propositions are:

1) All relationships are easily analysed
2) Every strategy can be fully visualised
3) Every motivation can be described
4) ArchiMate Specification offers a common language for describing the construction and operation of all the phases
5) ArchiMate models enable stakeholders to design all (if not 80%) of the capabilities, resources and outcomes of the business management requirements

If at the end of the exercise you find one proposition to be false, then the unambiguous claim is not proven and you now have to ask yourselves: Where do you go from here? Knowing human nature as I do, most of you reading this (that is if you have gotten to this point) will now either:

a) Simply shrug your shoulders and carry on as usual, hoping that things will improve or
b) At least stop thinking about this and if you have the nerve to follow what I have to say, you will find the solutions to all the problems

If you decide on a), well I have news for you, things will not get better and for those of you who persist with trying to develop your own approach, try a bit of propositional logic on your statements and see if your approach is any more valid than that of ArchiMate and TOGAF. I am more than capable of assisting you with this exercise.

Charles Meyer Richter
Principal information architect and diagnostician
Ripose Pty Limited
charles.richter@ripose.com

Note:

1) The orange shows a problem.
   1.1) For example nowhere in the documentation have I found any reference to inputs, yet the basic construction of any problem solving approach is to have an input, process the input and produce an outcome/output
   1.2) There does not seem to be any alignment of the Requirements management section in TOGAF with the ArchiMate Specification model from the business processes onwards
2) The number 1 in each of the cells declares the minimum number of 'models' that need to be created in order to fully describe the construction and operational phases. This shows you had better be prepared to develop a minimum of 44 such models. A daunting and time consuming task, especially if you are going to involve just about every manager in the business
3) If you think I am wrong please think again. If you know that I am, please prove that you are right. I am more than willing to delete all my work and retire for good.